BRIEFER ARTICLES

NOTES ON ORCHIDS

(WITH ONE FIGURE)

CATTLEYA MOSSIAE Hooker.—Mr. KNUDSEN, of Boulder, Colorado, has been very successful in growing this fine species under glass. On one occasion, it was found that the flowers were being fertilized, and it turned out that this was done by *Bombus Huntii* Greene, which gained access to the greenhouse. I now possess one of these bees, with several *C. Mossiae* pollinia attached to the mesothorax. The case is interesting, since this species of bee has had of course no previous experience with *Cattleya* or with any closely related plant. Mr. KNUDSEN believes that honey bees do not pollinate *Cattleya*.

CYTHEREA BULBOSA (L.) House.—On June 8, 1914, my wife and I were able to study this plant in life at Gresham, Colorado. It grew on a damp hillside with a north exposure, under *Populus tremuloides* and young Engelmann spruce, with *Arnica cordifolia* Hook., *Chamaenerion angustifolium* (L.) Scop., and *Fragaria.* We were particularly anxious to see the process of pollination, but in this we were disappointed, owing to the bad weather. We saw no insects on the orchids, but a few *Bombus* were flying around. There can be little doubt that the work is done by *Bombus*, which bending down (almost standing on its head) to get the nectar, would receive the pollen on the upper side of its thorax. In Idaho this orchid is represented by a variety, *Cytherea bulbosa occidentalis* (*Calypso bulbosa occidentalis* Holzinger, Contrib. Nat. Herb. 3:251. 1895), in which the beard on the lip is white instead of yellow. In the Colorado form it is yellow. There is, however, some question whether the Colorado plant is the same as that of the northeastern states, so I give some descriptive details from the living plant as observed at Gresham.

Scape lilac; sepals and petals "similar, ascending, spreading" (AMES), magenta (nearly rose vineaux of GRAVEREAUX, but a little bluer), about 20 mm. long, the median sepal exceeding the lip (wholly different from the figure in BRITTON and BROWN'S *Illustrated flora*); sepals and petals 3-veined, but the veins not evident except on close

inspection; winged column exactly the color of sepals and petals, diameter 6.5 mm., apex truncate; lip 19 mm. long, 9.5 mm. broad near base, the basal half profusely streaked with dark crimson on a white ground within, the crimson occupying more than half the surface; at the end of the opening of the lip above is a lemon yellow patch with three rows of yellow hairs, and near the distal end of each row is a bunch of shorter, dark red, claviform hairs; the apical expansion of the lip is about 9 mm. long and 7 mm. wide (longer than in BRITTON's figure), the apex briefly pointed, not widened or emarginate, as BRITTON's figure shows; apical part of lip whitish, flushed with pink distally, but without dark spots except the three patches of claviform glands on the yellow area; beneath, the lip or sac ends in two hornlike processes, 2.5–3 mm. long, which do not extend beyond the apical extension above; these horns (which contain nectar) and the region about their base are pale yellowish.

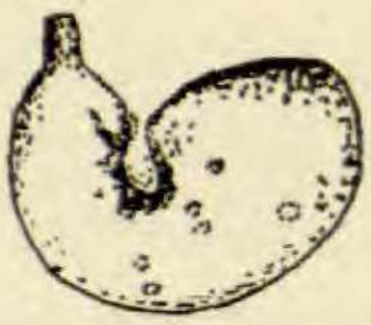

FIG. 1.—*Antholithes pediloides*, n. sp.

CYPRIPEDIUM VEGANUM Cockerell and Barker.—I have grown this successfully in my garden at Boulder, the plants coming from the Upper Pecos. On May 24, 1914, I saw a female bee *Osmia armaticeps* Cresson enter the flower through the upper aperture of the lip, and eventually emerge at the side behind, following the route indicated by H. MÜLLER.[1] It forced its way out with considerable difficulty, the passage being almost too narrow for it. Smaller bees are able to crawl out by the way they came in, and consequently are not agents in pollination.

Antholithes pediloides, n. sp. (fossil).—Lip(?) apparently saccate, as preserved coffee-brown, much darker than the shale, a little over 12 mm. long; no venation visible (fig. 1).

This object, which I have repeatedly studied, has all the appearance of being the lip of a *Cypripedium*, showing a strong callus around the lateral sinuses, and even, by a dark shade, some indication of the margin of the sterile stamen. Comparison with living *Cypripedium* flowers appeared to confirm the identification. On the other hand, it appears very unlikely that a *Cypripedium* lip would be separated from the rest of the flower and preserved in this manner. I think we can say with certainty that the object is neither a fruit nor a leaf; the apparent lateral sinuses are not due to any accidental tearing or breaking. There remains, however, a feature which I cannot at present explain. Irregu-

[1] KNUTH, Blütenbiologie **2**:459. 1899.

larly scattered over the surface are small round subhyaline spots, evidently representing perforations of the tissue. These are usually, but not always, in pairs. I suppose that they represent the work of some insect, but what one, I am quite at a loss to imagine.

The fossil was collected by Mr. GEO. N. ROHWER, at Station 14, in the Miocene shales of Florissant, Colorado.—T. D. A. COCKERELL, *University of Colorado, Boulder.*